

LISTERIOSIS

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description:

Reported cases of listeriosis typically manifest as meningoen­cephalitis or bacteremia in newborns and adults. Symptoms of meningoen­cephalitis include fever, headache, stiff neck, nausea, and vomiting. Infection with *L. monocytogenes* may cause abortion in pregnant women. The onset may be sudden, or in the elderly and in those who are immunocompromised, it may be gradual. Delirium and coma may occur. Newborns, the elderly, immunocompromised persons, and pregnant women are most at risk for severe symptoms. Infections in healthy persons may resemble mild flu-like illness.

Causative Agent:

Listeriosis is caused by the bacterium *Listeria monocytogenes*.

Differential Diagnosis:

Group B streptococci and *E. coli* also cause septicemia and neonatal meningitis.

Laboratory identification:

Laboratory diagnosis is based on isolation of *Listeria* from CSF, blood, amniotic fluid, placenta, meconium, placenta, gastric washings or other specimens. Serological tests are considered unreliable.

Utah Public Health Laboratories (UPHL) All isolates must be submitted to UPHL.

Treatment:

For severe infections, treatment with intravenous ampicillin and an aminoglycoside are recommended. For less severe infections, ampicillin alone can be given. Cephalosporins are not active against *Listeria*. When an infection occurs during pregnancy, the prompt administration of antibiotics can often prevent infection of the fetus or newborn.

Case fatality:

Death is more likely to occur in the elderly and in persons with serious medical problems. The case fatality rate in infected newborns is about 30%.

Reservoir:

Reservoirs for *L. monocytogenes* are soil, water, silage, mammals, and fowl.

Transmission:

Listeria can be acquired through ingestion of contaminated foods or through contact with infected animals or birds. Unlike most other foodborne pathogens, *Listeria* can grow in contaminated, refrigerated foods. Rare nursery outbreaks have been reported and attributed to contaminated equipment or materials. *L. monocytogenes* may be acquired by

the fetus *in utero* or during delivery. Other than mother-to-fetus transmission, person-to-person transmission does not occur.

Susceptibility:

Although healthy persons may consume contaminated food without becoming ill, certain persons at high risk for infection may get listeriosis after eating food contaminated with even a few bacteria. Persons at high risk for infection include:

- Pregnant women – About one third of listeriosis cases happen during pregnancy.
- Newborns – Newborns are very likely to suffer the serious effects of infection during their mother's pregnancy. Infants may be stillborn, born with septicemia (bacteria in their blood), or develop meningitis (inflammation of the covering of the brain or spinal cord) very early in life, even if the mother is asymptomatic.
- Persons with weakened immune systems – This would include persons with cancer, diabetes, kidney disease, AIDS, persons who are taking glucocorticoids, or the elderly.

Incubation period:

A range of 3–70 days has been reported, with a median incubation period of about 21 days.

Period of communicability:

L. monocytogenes may be shed for months in the stool of infected persons. Following delivery, mothers of infected newborns may shed *L. monocytogenes* for 7–10 days in vaginal secretions or in urine.

Epidemiology:

Listeria is widely distributed in nature. Most cases of human listeriosis are sporadic, but foodborne and nosocomial outbreaks have been documented. Foods associated with infection include unpasteurized milk and milk products (including soft cheeses), processed meats, and contaminated vegetables. Newborns, the elderly, immunocompromised persons, and pregnant women are at greater risk of infection. About 30% of diagnosed cases occur within the first three weeks of life. Although listeriosis is uncommon in the United States, anyone can get listeriosis if a person eats food contaminated with *Listeria* bacteria. There are roughly three cases of listeriosis reported to UDOH each year.

PUBLIC HEALTH CONTROL MEASURES

Public health responsibility:

- Investigate all suspect cases of disease and fill out and submit appropriate disease investigation forms.
- Provide education to the general public, clinicians, and first responders regarding disease transmission and prevention.
- Identify clusters or outbreaks of this disease and determine the source.
- Identify cases and sources to prevent further transmission.

Prevention:

Environmental Measures

Implicated food items must be removed from consumption. A decision about testing implicated food items can be made in consultation with the enteric epidemiologist at UDOH and UPHL.

The general policy of UPHL is to test only food samples implicated in suspected outbreaks, not in single cases (except when botulism is suspected). If holders of food implicated in single case incidents would like their food tested, they may be referred to a private laboratory that will test food or store the food in their freezer for a period of time in case additional reports are received. However, in certain circumstances, a single, confirmed case with leftover food that had been consumed within the incubation period may be considered for testing.

Personal Preventive Measures/Education

To avoid infection with *Listeria*, persons should:

- Thoroughly cook all meat, including hot dogs, and thoroughly reheat food until steaming hot.
- Wash all raw vegetables.
- Avoid raw (unpasteurized) milk or foods made from raw milk.
- Avoid contamination of cooked or ready-to-eat foods by raw meats or unwashed vegetables.
- Wash hands, knives, and cutting boards after handling uncooked foods.

In addition, persons at high risk for developing listeriosis (e.g., pregnant women or immunocompromised persons, including individuals taking steroids) should:

- Avoid soft cheeses (hard cheeses, processed cheeses, cream cheese, cottage cheese, and yogurt need not be avoided).
- Cook hot dogs and other ready-to-eat meats (such as sliced deli meat and prepackaged cold cuts) before eating.

Chemoprophylaxis:

None.

Vaccine:

None.

Isolation and quarantine requirements:

Isolation: None

Hospital: Standard precautions.

Quarantine: None

✓ CASE INVESTIGATION

Reporting:

All persons diagnosed with listeriosis should be reported to public health.

Case definition:

Listeriosis (*Listeria monocytogenes*) (2003)

Clinical description

In adults, invasive disease caused by *Listeria monocytogenes* manifests most commonly as meningitis or bacteremia; infection during pregnancy may result in fetal loss through miscarriage or stillbirth, or neonatal meningitis or bacteremia. Other manifestations can also be observed.

Laboratory criteria

- Isolation of *L. monocytogenes* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural, or pericardial fluid),

OR

- In the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue.

Case classification

Confirmed: a clinically compatible case that is laboratory-confirmed.

Criterion	Case Definition	
Clinical Evidence	Confirmed	
Meningitis	O	
Bacteremia	O	
Brain Abscess	O	
Endocarditis	O	
Neonatal sepsis		O
Spontaneous abortion		O
Stillbirth		O
Laboratory Evidence		
<i>L. monocytogenes</i> isolated from a clinical specimen	O	
<i>L. monocytogenes</i> isolated from placenta or fetal tissue		N
Epidemiologic Evidence		
Pregnancy		N
Notes: N = All —N criteria in the same column are Necessary to classify a case. O = At least one of these —O (Optional) criteria in each category (i.e., clinical evidence and laboratory evidence) in the same column—in conjunction with all —N criteria in the same column—is required to classify a case.		

Comment

The usefulness of other laboratory methods such as fluorescent antibody testing or polymerase chain reaction to diagnose invasive listeriosis have not been established.

Case Investigation Process:

- Identify the source of the infection.
- Assure isolate submission to UPHL.

Outbreaks:

CDC defines a food-borne outbreak as, “an incident in which two or more persons experience a similar illness resulting from the ingestion of a common food”. In order to confirm an outbreak of listeriosis, the same *Listeria* serotype must be isolated from the stool of at least 2 ill persons exposed to food that has been epidemiologically implicated or from which the same *Listeria* serotype has been isolated. The source of the infection should be identified and measures to identify additional ill persons and/or to remove the source from consumers should be taken.

Identification of case contacts and management:

Neonatal Infection/ Maternal Infant Transmission

When neonate is less than 1 month of age, please use the following data entry procedure.

UTNEDSS/ Trisano Data Entry

- The mother is the case-patient, or “parent” CMR
 - Enter mother’s medical record number in parent CMR
 - Enter mother’s symptoms in the parent CMR
 - Enter mother’s exposure history in parent CMR
 - Add attachments and lab report(s) for mother on parent CMR.
- Neonate is entered as a contact of the mother
 - Enter neonate medical record number as a contact of the mother
 - Enter neonate symptoms as a contact of the mother
 - Enter neonate exposure as a contact of the mother
 - Add attachments and lab report(s) for neonate as a contact of the mother
- Neonate may be promoted to own CMR as appropriate
- When searching UTNEDSS/ Trisano for name of mother or neonate, both CMRs should come up in search results

REFERENCES

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